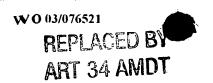


## **CLAIMS**

15

1. Ceramic colorants in which the particles of colorant have nanometric dimensions.

- 2. The ceramic colorants according to Claim 1, in which the particles have dimensions of between 5 nm and 600 nm.
  - 3. The ceramic colorants according to Claims 1 and 2 in the form of suspensions.
  - 4. The ceramic colorants according to Claim 3, in which the solvent of the suspension is a high-boiling alcohol.
- 5. The colorants according to Claim 4, in which the high-boiling alcohol is chosen in the group consisting of diethylene glycol or ethylene glycol or polyethylene glycol.
  - 6. The colorants according to Claims 1 and 2 in the form of powder.
  - 7. The colorants according to Claims 1 to 6, in which the nanometric particles are chosen in the group consisting of:
  - M<sup>II</sup>M<sup>III</sup><sub>2</sub>O<sub>4</sub>, where M<sup>II</sup> is chosen in the group consisting of Fe<sup>II</sup>, Zn, Co, Ni, Mn, and M<sup>III</sup> is chosen in the group consisting of Fe<sup>III</sup>, Al, Cr, Mn,
    - $CoAl_2O_4$ ,  $Ti(Sb,Cr)O_2$ ,  $(Zr,Pr)SiO_4$ ,  $(Zr,V)SiO_4$ ,  $(AlCr)_2O_3$ , (Al,Cr)  $MO_3$  (where M=Y, Nd, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb),  $CaSn_{1-x}Cr_xSiO_5$ ,  $Ti(Sb,Ni)O_2$ ,  $(Zr,V)O_2$ ,  $(Sn,V)O_2$ ,  $Sn_{1-x}Cr_xO_{3-x/2}$  (where x is comprised between 0.01 and 0.1),  $Au^0$ ,  $Ag^0$ ,  $Cu^0$ .
- 8. A process for the preparation of ceramic colorants according to Claims 1 to 7, in which:
  - to a known volume of alcohol there are added the salts of the desired metals, and the solution is then heated under stirring up to complete solubilization of the salts.
  - water is added in appropriate amounts for facilitating hydrolysis of the salts, and the solution is heated up to a temperature higher than 150°C.
- once the reaction is completed, the suspension that has formed is left to cool to room temperature,
  - the suspension thus obtained is subjected to dialysis or ultrafiltration to eliminate the salts and/or to replace the solvent;
  - possibly the suspension is centrifuged, and the precipitate is collected and dried.
- 9. The process for the preparation of ceramic colorants according to Claims 1 to 7, in which:
  - there are rapidly added the reagents (solutions of salts of metals) to a polar solvent



10

15

previously brought to the desired temperature of hydrolysis, and then the suspension is brought to room temperature, and the reaction environment is dehydrated with dehydrating agents, then proceeding as specified in Claim 8.

- 10. The process for the preparation of ceramic colorants according to Claims 1 to 7, in which:
- the salts are dissolved in the high-boiling alcohol at an adequate temperature;
- an unmixable solvent is added to the high-boiling alcohol to form an emulsion of micelles of nanometric dimensions
- the necessary amount of water is added to the suspension under stirring, allowing it to react at a temperature higher than 120°C;
- it is then left to cool to room temperature, then proceeding as specified in Claim 8.
- 11. Use of the colorants according to Claims 1 to 7 for colouring ceramic materials, ceramic bodies, enamels.
- 12. Use of the colorants according to Claims 1 to 7 for colouring fabrics made of fibre or in a bolt.
- 13. Use of the colorants according to claims 1-7 in the catalyst and pharmaceutical field.